

ENGINEER'S STICKER:										CONTRACTOR'S STICKER:									
0	Issued for approval					JV	AA	IK	10/03/2022										
A	Issued for approval					JV	AA	IK	13/01/2022										
تتقيح REV.	سبب الإصدار ISSUED FOR					بواسطة PREPARED	راجعها CHECKED	وافق عليها APPROVED	التاريخ DATE										
 Project No					المملكة العربية السعودية KINGDOM OF SAUDI ARABIA المؤسسة العامة لتحلية المياه المالحة SALINE WATER CONVERSION CORPORATION (SWCC)														
					نظام نقل مياه الجبيل – الرياض Jubail – Riyadh Water Transmission System محطة خزانات الخرج AL-KHARJ Reservoir Station														
المهندس ENGINEER																			
المقاول CONTRACTOR					 RTCC شركة الراشد للتجارة والمقاولات AL-RASHID TRADING & CONTRACTING CO.														
					SPECIFICATION OF LEVEL SWITCH AND ITP														
					DOCUMENT No.										SHEET		REV.		
					4	9	-	Q	B	2	0	-	H	-	3	1	5	1	0
FINAL ENGINEERING																			

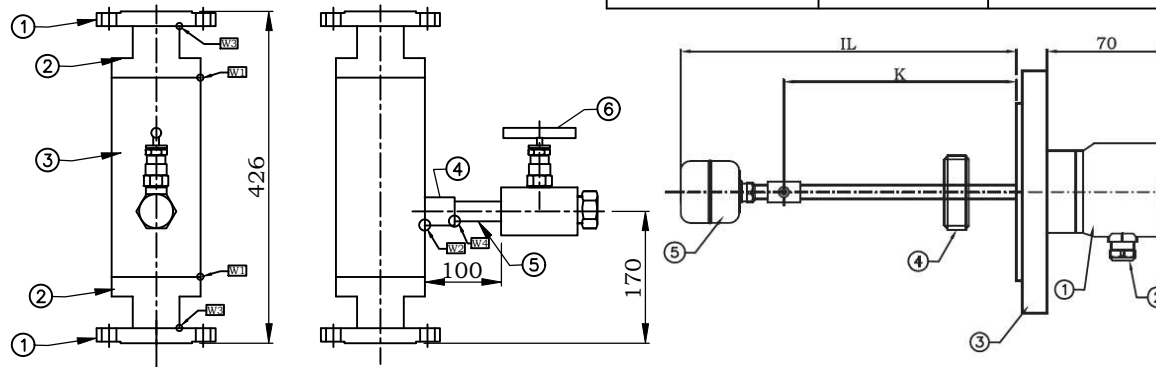
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	Saline Water Conversion Corporation							
	AL-KHARJ RESERVOIR STATION							
	Subject:							Spec. No. N/A
SPECIFICATION OF LEVEL SWITCH AND ITP								
Revision Index	First	Rev.	A	0				Document Number 49-QB20-H-315
	Issue	Date:	13/01/2022	10/03/2022				
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Final Engineering			Contractor				Subcontractor	
			AL-RASHID TRADING & CONTRACTING CO.					

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	Issue	Date:	13/01/2022	10/03/2022				
1. Scope: The Material submittal covers manufacturing and factory testing, as well as for preparation and supply of documentation for Level Switch used for Al Kharj Reservoir Stations Project for SWCC Water Transmission System. 2. References and Standards Project specifications: S01 Design and Construction of I&C Systems S01_QC10-H-121 S02 Field Instrumentation S02_QC10-H-122 S03 Installation and Start-up of Field Instrumentation. S03_QC10-H-123								
Final Engineering			Contractor				Subcontractor	
			AL-RASHID TRADING & CONTRACTING CO.					

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3. Technical Datasheet <u>Level Switch :</u> HIF-FV2"/150/RF-L190/100/0-VU-V44HI Horizontal Float Switch Type HLS-SA Pressure: 1 bar Fluid density: 1000 kg/m³ Temperature range: -10°C up to 80°C Material: Stainless steel 316Ti (EN 1.4571) Housing: Stainless steel Electrical connection: M20 x 1.5 mm with cable gland Process connection: Flange ASME B16.5 2" 150# Form RF Insertion length (L): 190 mm Contact pipe length (K): 100 mm Contact: Change-over (SPDT) Switch rating: max. AC 230V; 40VA; 1A / DC 230V; 20W; 0.5A Float: V44HI, cylindrical, stainless steel 316Ti, OD 44 x 52 mm <u>Chamber for Float switch:</u> Chamber dimensions: OD 114.3 x 3.05 mm (4" Sch. 10S) Chamber material: SS316L Process connections orientation: Top-Bottom Chamber end top: 2" 150# RF (Blind Flange with Special Cap) Chamber end bottom: 2" 150# RF (Blind Flange with Special Cap) Total chamber length: 250mm Vent/Drain connection: NA Accessories: Stud-Nut & Gasket <u>Tag #:</u> T1AKB49CL302; T1AKB49CL301								
Final Engineering			Contractor				Subcontractor	
			AL-RASHID TRADING & CONTRACTING CO.					

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4. GAD DRAWING								
Final Engineering			Contractor				Subcontractor	
			AL-RASHID TRADING & CONTRACTING CO.					

ALL DIMENSIONS ARE IN mm.

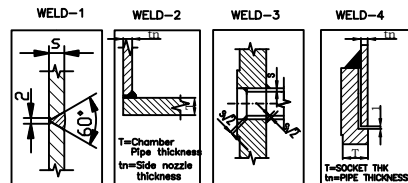


CHAMBER FOR FLOAT SWITCH

SERIAL NO	TAG NO	PRESSURE (BAR)	KSR FLOAT SWITCH CAGE MODEL : BZG-2"/150/RF-L426	
WKS-2201-1853-01	T1AKB49CL301	ATM		
WKS-2201-1853-02	T1AKB49CL302	ATM	CONSTRUCTION BILL OF MATERIALS	
			1	FLANGE ASME B16.5 2" 150# FORM SORF SS 316L
			2	SPECIAL REDUCING CAP - 4" x 2" SCH10 SS 316L
			3	CHAMBER PIPE - 4" SCH 10 SS 316L
			4	HALF COUPLING - 1/2" SW SS316L
			5	DRAIN PIPE - 1/2" SCH 40 SS 316L
			6	DRAIN VALVE WITH PLUG - 1/2" NPT NEEDLE VALVE SS 316L
KSR FLOAT SWITCH MODEL : HIF-FV3"/150/RF-L190/100/60-LU-V44HI				
			CONSTRUCTION BILL OF MATERIALS	
			1	HOUSING MOC: STAINLESS STEEL
			2	ELECTRICAL CONNECTION: M20 X 1.5 MM WITH CABLE GLAND
			3	FLANGE ASME B16.5 3" 150# FORM RF SS 316L
			4	STOPPER
5	FLOAT: V44HI, CYLINDRICAL, SS 316Ti, OD 44 x 52 mm X 1 NOS.			

NOTES:

- 1) DIMENSIONAL TEST REPORT.
- 3) TEST & GUARANTEE CERTIFICATE.
- 3) ADDITIONAL ACCESSORIES PER TAG:
 - i) STUD-NUT: 5/8 x 90mm SS316L, QTY: 8 NOS.
 - ii) GASKET: 2" 150# SPW SS316L IR/OR, QTY: 2 NOS.
- 4) NAMEPLATE: ADHESIVE LABEL



CLIENT NAME : WIKA MIDDLE EAST FZE						DRG. Name : KSR HORIZONTAL FLOAT SWITCH CHAMBER										DRG. No. WKS.1853.00																													
						Material		Scale	Drawn By	Drawn Date	Appd. By	Appd. Date																																	
						As Above Table		NTS	S.S.N.	07/01/2022	D.J.R.	07/01/2022																																	
						Wika Instruments India Pvt.Ltd. Plot No. 40, Gat. No. 94, High-Cliff Industrial Estate, Wagholi, Village Kesand, Pune - 412 207 <table><tr><th colspan="4">Surface Roughness Values</th><th colspan="4">Unspecified Tolerances</th></tr><tr><td>ISO 1302</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>0.5 6</td><td>0.5 30</td><td>0.5 120</td><td>0.5 400</td></tr><tr><td>Rz IN µm</td><td>-</td><td>63</td><td>16</td><td>4</td><td>1</td><td>±0.1</td><td>±0.2</td><td>±0.3</td><td>±0.5</td></tr></table>										Surface Roughness Values				Unspecified Tolerances				ISO 1302	✓	✓	✓	✓	✓	0.5 6	0.5 30	0.5 120	0.5 400	Rz IN µm	-	63	16	4	1	±0.1	±0.2	±0.3	±0.5		
Surface Roughness Values				Unspecified Tolerances																																									
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Rz IN µm	-	63	16	4	1	±0.1	±0.2	±0.3	±0.5																																				
0	Issued for approval		SSN	SSK	DJR	7/1/22											MOST IMPORTANT DIMENSIONS, DEVIATIONS ARE NOT ALLOWED																												
Rev.	Description		Mod.by	Ckd.	Appd.	Appd.																																							

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5. CATALOGUE								
Final Engineering			Contractor				Subcontractor	
			AL-RASHID TRADING & CONTRACTING CO.					

Float switch

For the process industry, horizontal installation

Models HLS-S, HLS-P

WIKA data sheet LM 30.02



for further approvals
see page 2

Applications

- Level detection for almost all liquid media
- Pump and level control
- Chemical, petrochemical industry, natural gas, offshore, shipbuilding, machine building, power generating equipment, power plants
- Process water and drinking water treatment

Special features

- Large range of application due to the simple, proven functional principle
- For harsh operating conditions, long service life
- Operating limits:
 - Operating temperature: $T = -120 \dots +350 \text{ }^{\circ}\text{C}$
 - Operating pressure: $P = \text{Vacuum to } 232 \text{ bar}$
 - Limit density: $\rho \geq 600 \text{ kg/m}^3$
- Stainless steel and plastic versions
- Explosion-protected versions

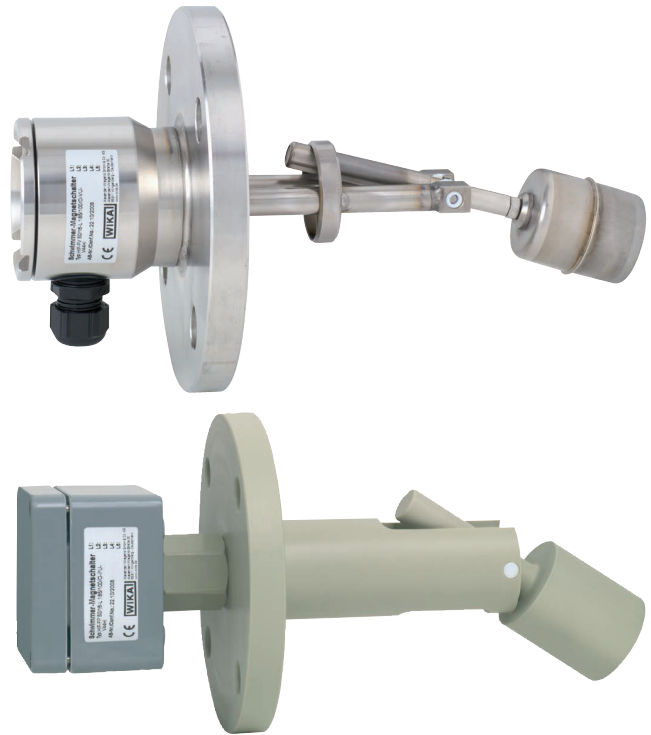


Fig. top: Stainless steel version, model HLS-S

Fig. bottom: Plastic version, model HLS-P

Description

In addition to the various applications for float switches for vertical installation (model FLS), the model HLS horizontal float switches likewise offer innumerable possibilities to monitor and/or switch levels in order to indicate minimum/maximum levels.

The float is attached to a supported, swivelling lever and moves with the level of the medium being measured. By means of a permanent magnet, fixed to the end of the lever, when a preset switch point is reached, a reed contact (inert gas contact) within the contact tube is actuated.

By using a permanent magnet and a reed contact the switching operation is non-contact, free from wear and needs no power supply. The functioning of the float switch is independent of foaming, conductivity, vapours, bubble formation and vibrations.

The signal processing is universal. Direct connection to PLCs, NAMUR connections, signal amplifiers or contact protection relays is possible.

The float switch is simple to mount and maintenance-free, so the costs of mounting, commissioning and operation are low.

Model overview

Model	Description	Materials		
		Stainless steel 1.4571 (316Ti)	Stainless steel 1.4404 (316L)	Polypropylene (PP)
HLS-S	Standard version	x	x	-
HLS-P	Plastic version	-	-	x

Temperature range (process)

- Model HLS-S -120 ... +350 °C
- Model HLS-P -10 ... +80 °C

Operating pressure

- Model HLS-S 232 bar
- Model HLS-P 6 bar

Approvals

■ Model HLS-S

Logo	Description	Country
 	EU declaration of conformity ■ Low voltage directive ■ RoHS directive ■ ATEX directive (option) Hazardous areas (no. IExU03ATEX1038 X) - Ex i Zone 1 mounting to zone 0 gas II 1/2G Ex ia IIC T6-T2 Ga/Gb Zone 21 dust II 2D Ex ia IIIC T80 °C Db	European Union
	EAC ■ EMC directive and low voltage directive No. RU Д-DE.A301.B.00820 ■ Hazardous areas No. RU C-DE.AB72.B.02373	Eurasian Economic Community
	DNV GL ■ Ships, shipbuilding (e.g. offshore) No. TAA00000M3 ■ Hazardous areas No. TAA00000M3	International
	ABS ■ Ships, shipbuilding (e.g. offshore) No. 16-HG1591051-PDA	International

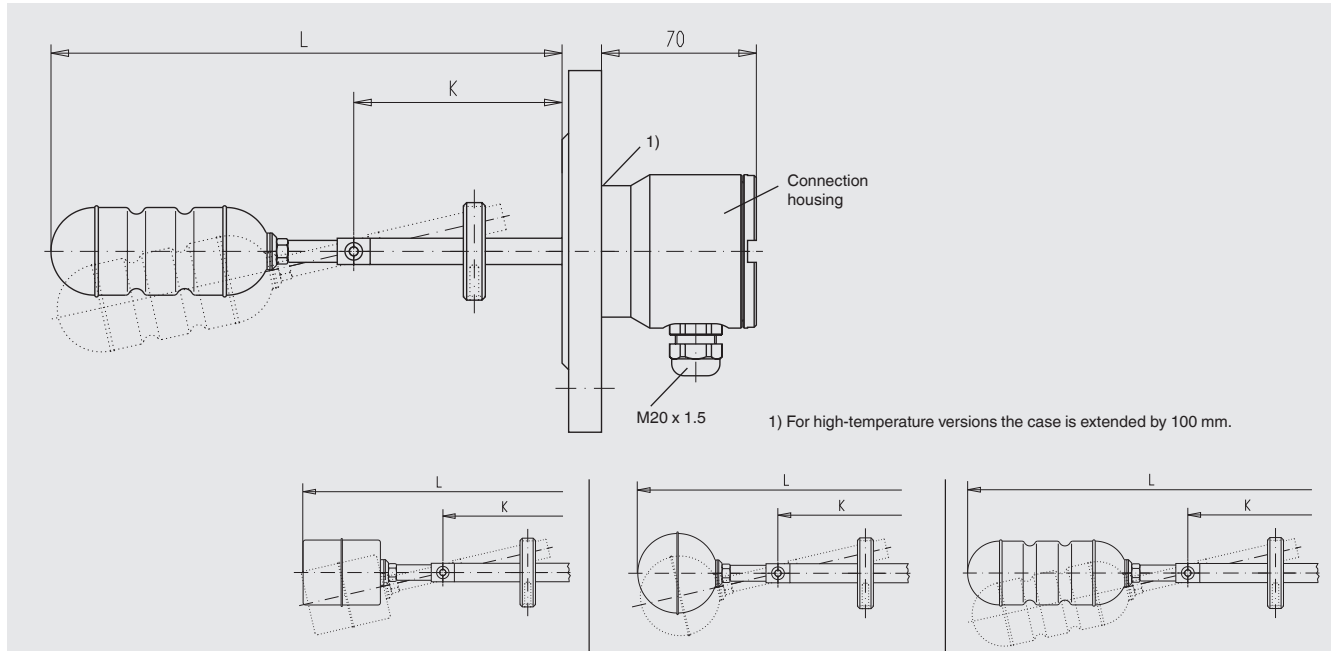
■ Model HLS-P

Logo	Description	Country
	EU declaration of conformity ■ Low voltage directive ■ RoHS directive	European Union
	EAC ■ EMC directive and low voltage directive No. RU Д-DE.A301.B.00820	Eurasian Economic Community

Approvals and certificates, see website

Float switch with connection housing, standard version, models HLS-SA, HLS-SB

Process connection, contact tube and float from stainless steel 1.4571



	Float model V44HI	Float model T52HI and model T52HI/Gr. 5	Float model ZVSS43/100HI
Electrical connection	Connection housing, stainless steel 1.4571		
Process connection	■ Mounting flange - DIN DN 50 ... DN 100, PN 6 ... PN 400 - DIN EN 1092-1 DN 50 ... DN 100, PN 6 ... PN 400 - ANSI 2" ... 4", class 150 ... 600 - Square flange DN 80 and DN 92 - others on request		
Insertion length L	190 ... 990 mm	190 ... 990 mm	240 ... 990 mm
Contact tube length K	100 ... 900 mm	100 ... 900 mm	100 ... 850 mm
Float			
■ Material	Stainless steel 1.4571	Model T52HI: Titanium 3.7035, grade 2 Model T52HI/Gr. 5: Titanium 3.7165, grade 5	Stainless steel 1.4571
■ Diameter	44 mm	52 mm	43 mm
■ Length	52 mm	52 mm	100 mm
Max. operating pressure	6 bar	Model T52HI: 100 bar Model T52HI/Gr. 5: 232 bar	20 bar
Min. density	600 kg/m ³		
Temperature range			
■ Standard version	-50 ... +250 °C		
■ High-temperature version HT	-50 ... +250 °C		
■ High-temperature version HHT	-50 ... +350 °C		
■ Low-temperature version	-120 ... +250 °C		
Switching function	Alternatively normally open (NO), normally closed (NC) or change-over (SPDT) - on rising or falling level		
Switching power	AC ≤ 230 V; 40 VA; 1 A DC ≤ 230 V; 20 W; 0.5 A Please observe contact protection measures! Attention - versions without protective conductor connection: Attention: Operation only at safety extra-low voltage, e.g. contact protection relay or external grounding		
Mounting position	Horizontal ±30°		
Ingress protection	IP67 per IEC/EN 60529		

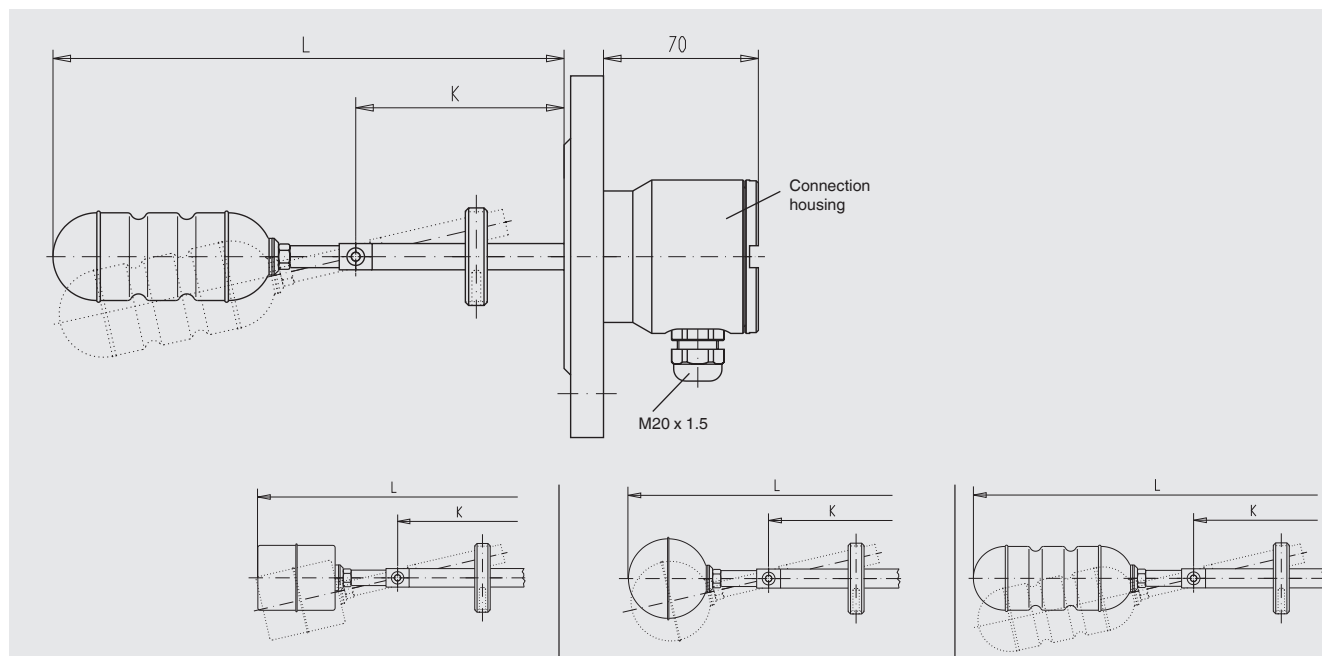
Versions in titanium, Hastelloy or other materials on request

Float switch, explosion-protected version Ex i, intrinsically safe Model HLS-SBI (HAG)



II 1G/2GD EEx ia IIC T6-T2 IP6X T80 °C (Nr. IBExU03ATEX1038 X)

Process connection, contact tube and float from stainless steel 1.4571

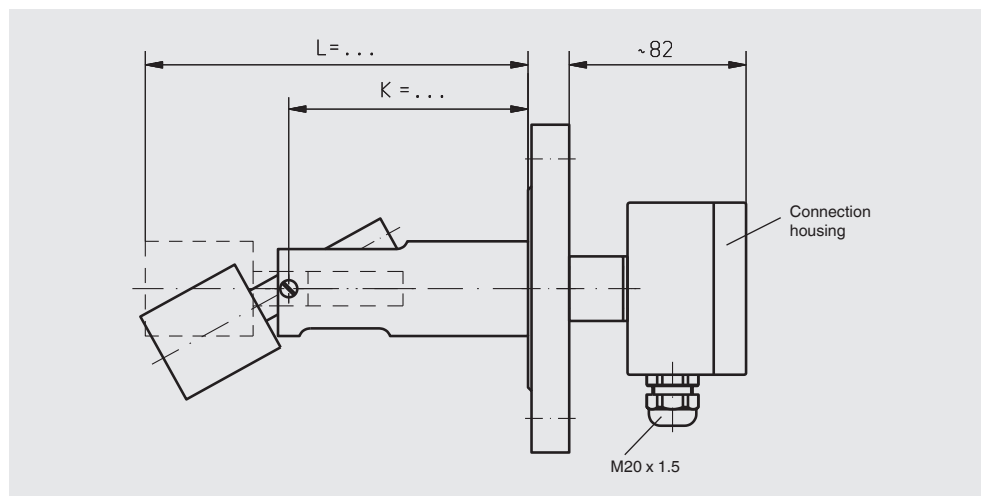


	Float model V44HI			Float model T52HI and model T52HI/Gr. 5		Float model ZVSS43/100HI
Electrical connection	Connection housing, stainless steel 1.4571					
Process connection	■ Mounting flange - DIN DN 50 ... DN 100, PN 6 ... PN 160 - DIN EN 1092-1 DN 50 ... DN 100, PN 6 ... PN 160 - ANSI 2" ... 4", class 150 ... 900 - Square flange DN 80 and DN 92 others on request					
Insertion length L	190 ... 990 mm		190 ... 990 mm		240 ... 990 mm	
Contact tube length K	100 ... 900 mm		100 ... 900 mm		100 ... 850 mm	
Float						
■ Material	Stainless steel 1.4571		Model T52HI: Titanium 3.7035, grade 2 Model T52HI/Gr. 5: Titanium 3.7165, grade 5		Stainless steel 1.4571	
■ Diameter	44 mm		52 mm		43 mm	
■ Length	52 mm		52 mm		100 mm	
Max. operating pressure	6 bar		Model T52HI: 100 bar Model T52HI/Gr. 5: 180 bar		20 bar	
Min. density	600 kg/m³					
Temperature range	-50 ... +180 °C depending on the temperature class					
Temperature class	T2	T3	T4	T5	T6	
■ Process temperature	≤ 180 °C	≤ 160 °C	≤ 108 °C	≤ 80 °C	≤ 65 °C	
■ Ambient temperature	≤ 60 °C	≤ 80 °C	≤ 80 °C	≤ 80 °C	≤ 60 °C	
Switching function	1 x change-over (SPDT)					
Switching power	Only for connection to a certified intrinsically safe circuit with U _{max} = 36 V, I _{max} = 100 mA					
Mounting position	Horizontal ±30°					
Ingress protection	IP67 per IEC/EN 60529					

Float switch, plastic version

Model HLS-P

Process connection, contact tube and float from polypropylene (PP)



	Float model PP44HI
Electrical connection	Connection housing, polypropylene or polyester
Process connection	■ Mounting flange - DIN DN 50 ... DN 100, PN 16, form A - ANSI 2" ... 4", class 150 FF
Insertion length L	176 mm
Contact tube length K	111 mm
Float	
■ Material	Polypropylene
■ Diameter	44 mm
■ Length	52 mm
Max. operating pressure	4 bar
Min. density	750 kg/m ³
Temperature range	-10 ... +80 °C
Switching function	Alternatively normally open (NO), normally closed (NC) or change-over (SPDT) - on rising level
Switching power	AC ≤ 230 V; 40 VA; 1 A DC ≤ 230 V; 20 W; 0.5 A Please observe contact protection measures! Attention - versions without protective conductor connection: Attention: Operation only at safety extra-low voltage, e.g. contact protection relay or external grounding
Mounting position	Horizontal ±30°
Ingress protection	IP65 per IEC/EN 60529

Electrical connections

Reed contact

1 switch point

1 switch point
Wiring for operation with a PLC

1 switch point
NAMUR circuit per DIN EN 60947-5-6

Contact protection measures

The reed contacts should be protected against any voltage or current spikes that might occur.

Depending on the different load types different protective circuits are used.



Model KFD2-ER-1.6



RC element

Contact protection relay	Contacts	Input	Power supply	Approval number	Order no.
KFD2-ER-1.6	1 x change-over AC 250 V, 2 A	2 x contacts	DC 20 ... 30 V	-	123806
KFD2-SR2-Ex2.W	2 x change-over AC 253 V, 2 A	2 x contacts	DC 20 ... 30 V	II 1GD Ex ia IIC PTB 02 ATEX 2073	124344
KFA6-ER-1.6	1 x change-over AC 250 V, 2 A	2 x contacts	AC 230 V	-	124341
KFA6-SR2-Ex2.W	2 x change-over AC 253 V, 2 A	2 x contacts	AC 230 V	II 1GD Ex ia IIC PTB 02 ATEX 2073	123794

RC element	Capacitance	Resistance	Voltage	Order no.
B3/110	0.33 µF	470 Ω	AC 110 V	126529
B3/230	0.33 µF	820 Ω	AC 230 V	126530

Inductive load
AC voltage

Inductive load
DC voltage

Capacitive load

Ordering information

To order the described product the order number (if available) is sufficient.

Alternatively:

Model / Version / Electrical connection / Process connection / Contact tube (insertion length L, contact tube length K) / Options

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The specifications given in this document represent the state of engineering at the time of publishing.
We reserve the right to make modifications to the specifications and materials.



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6. INSPECTION AND TEST PLAN								
Final Engineering			Contractor				Subcontractor	
			AL-RASHID TRADING & CONTRACTING CO.					

INSPECTION AND TEST PLAN



Customer :		AL-Rashid Trading and Contracting Company				WIKA Ref. : SO001218	
Customer P.O No.:		16401/1648				Date : 15.01.2022	
Description :		Level Switch				Page No.: 5 of 5	
Point No.	Activity	Quality Controlling Document / Spec	Acceptance Criteria	Verifying Docs / Record	<u>WIKA</u>	<u>RTCC</u>	<u>SWCC</u>
1	<u>Material Receipt Inspection</u> Upon receipt of raw materials- dimensions, material stamping & documentation confirmed;	PO, Project Specifications	WIKA Standard	MTC EN 10204, 3.1	R	R	R
2	Visual and Dimensional Check		Dimensions as per Drawings	V& D Report	W	R	R
3	Review of Accessories		As per Drawings	Drawings	W	R	R
4	Check of Nameplate		As per Drawings	Drawings	W	R	R
5	Certificate of Compliance		PO	COC	R	R	R
6	Issue of Inspection Release Note		IRN	Packing List	H	H	R

H: Hold

R: Review (100%)

W: Witness-100%